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BULLETIN OF THE MASSACHUSETTS ARCHAEOLOGICAL SOCIETY

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Publisher

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The Massachusetts Archaeological Society, Inc.

Office of the Editor

Dept. of Anthropology

UMass/Boston

Boston, Massachusetts 02125

Telephone (617) 929-8150

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The Museum has extensive exhibits of stone implements, obtained for the most part from the Massachusetts area. They are arranged in culture periods identified in the Northeast and cover a time extension of some 10,000 years.

V.47#2

EDITOR'S NOTE

Barbara E. Luedtke

The articles in this issue all focus on, or use data from, the late prehistoric and early historic periods, around the time Europeans first settled in New England. This is an especially fascinating and dynamic period during which both Indians and Europeans adjusted to difficult new conditions in creative ways. Recent scholarship on this period, based on both archaeological and historical data, is slowly illuminating the Indian side of the story and in the process, often contradicting our usual stereotypes of the Indians as either "barbaric savages", or "noble but passive victims."

The first three articles, by Andrews, Little, and Weinstein, deal with important Indian food resources. The use of coastal resources such as fish and shellfish undoubtedly began as soon as people and resources were both in the same region, but we know most about how coastal resources were exploited during the late prehistoric and early historic periods. Both Little and Andrews use their own experiences of harvesting coastal resources, as well as early historical descriptions of Indian fishing and shellfish gathering, to shed light on prehistoric practices. Weinstein's article deals with cultivated plants, food resources not used in New England until relatively late in the prehistoric period, but which were vital to both Indians and to colonists during the Contact period.

Pretola's article describes a type of artifact, the effigy pipe, that usually dates to the late prehistoric or early historic period in this region. It is believed that such pipes were used in some traditional religious ceremonies. Brenner's article demonstrates that such religious beliefs, along with other traditional Indian ways of life, persisted well into the historic period, despite strong opposition from Christian missionaries and civil authorities. Brady describes another possible early historic religious artifact, while Barber ends with a brief update on his earlier article about a Contact Period artifact.

Along with the time period, there is another trend running through this issue; the articles by Andrews, Weinstein, and Brenner are all based on papers they presented at Annual or Semi-annual meetings of the Massachusetts Archaeological Society. The Program Committee and the Editor have been making efforts to convince people who present papers to submit them to the Bulletin, and we are beginning to achieve some success.

This is my final issue of the Bulletin, after six years of editorship. I've enjoyed my terms thoroughly, but feel it is time for a change. A journal stays healthiest if it is given infusions of new ideas and energies every once in a while, and I know that the new editor, Betty Little, brings tremendous enthusiasm and knowledge to the job.

Looking back, the best part of being editor has been working with the many authors who contributed to these issues. I appreciated their hard work and care in preparing manuscripts, their patience and professionalism when I asked for revisions, and their kindness to me when I occasionally let errors slip through in their articles. I've learned a lot from them, and am very grateful to all of them.

The worst part of the job has been the non-authors. I've met many people with fabulous collections, interesting ideas, or exciting new interpretations of the past, and it has been truly frustrating not to be able to talk them into sharing their knowledge and findings with the rest of us.

Therefore, I am going to end my last editorial with a plea to the non-authors (and I think you know who you are); all will be forgiven if you join your many friends and colleagues who write articles for the Bulletin! No journal can be any greater than the sum of the articles submitted to it. If we all contribute, we can keep the Bulletin of the Massachusetts Archaeological Society a vital and interesting publication.

* * * * *

INDIAN FISH AND FISHING OFF COASTAL MASSACHUSETTS

J. Clinton Andrews

Aerial photography and various charts show how near the ocean surface are the Nantucket Shoals. According to geologists, the bottom of the ocean to the south and east of New England was above sea level at the time the glacier began to recede. This coastal plain was cut by meltwater streams without doubt ending in deltas. In the upper reaches of these streams are the ponds, bays and harbors of today. Most of the area between the terminal moraine and the ancient shoreline is now under water and the inundation is still going on. The waves of the ocean erode the higher land and throw sand bars across the depressions. Comparison of modern maps and charts with the earliest ones shows the recession of the shoreline and the erosion and temporary replacement of barrier beaches and sandy points. Personal experience convinces me that the erosion at the surf line extends as far below the surface as the height of land above it. Some of the sand from this process is deposited in long sandy points, diverting the mouth of streams along shore, or enclosing bays. These points are prime fishing areas.

It is doubtful if the Indians fished the ocean side of these points the way modern anglers do. On the protected bay side the sand drops sharply into water of varying depths. Fish follow these shores closely, bringing them within easy reach. Before the time of otter trawling (1900 A.D.) summer flounders (Table 4) were plentiful here. They could be caught by the use of a torch and spear at night when many fish come closer to land. No elaborate spear need be used. A technique we assumed was Indian was simply to use a sharpened stick to pin the fish to the sand, then grasp it where the gills afford a firm grip and toss it ashore. Skates could also be caught the same way. They are excellent eating but difficult to dress for the modern way of cooking. As there is no calcium in their bones nothing has been left to show whether the Indians ate them or not.

A fishweir would also be effective along these shores. A fishweir is a barrier of netting or brush, anchored to the bottom in a line at right angles to the shore. It ends in a circular or heart-shaped enclosure with an opening on one or both sides of the leader. Schools of fish tend to swim parallel to obstructions, so after entering the enclosure they circle around the walls, and when they reach the vicinity of the entrance, they are headed away from it. Not being able to look backwards they do not discover the way to escape and continue circling. Once confined, they may be taken out with a net, or large fish may be speared. If the tidal range is great enough, they may be left dry at low tide.

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TABLE 4
COMMON AND SCIENTIFIC NAMES OF FISH

Alewife	<u>Alosa pseudoharengus</u> (Wilson)
Bluefish	<u>Pomatomus saltatrix</u> (Linnaeus)
Cod	<u>Gadus morhua</u> (Linnaeus)
Eel	<u>Anguilla rostrata</u> (LeSeur)
Hake	<u>Urophycis chuss</u> (Walbaum)
Mackerel	<u>Scomber scomberus</u> (Linnaeus)
Pickrel	<u>Esox niger</u> (LeSeur)
Pollock	<u>Pollachius virens</u> (Linnaeus)
Scup	<u>Stenotomus chrysops</u> (Linnaeus)
Sea bass	<u>Centropristes striatus</u> (Linnaeus)
Sea robin	<u>Prionotus carolinus</u> (Linnaeus)
Skates	<u>Raja erinacea</u> and <u>R. ocellata</u> (Mitchill)
Smooth dogfish	<u>Mustelus canis</u> (Mitchill)
Striped bass	<u>Roccus saxatilis</u> (Walbaum)
Sturgeon	<u>Acipenser oxyrhynchus</u> (Mitchill)
Summer flounder	<u>Paralichthys dentatus</u> (Linnaeus)
Tautog	<u>Tautoga onitis</u> (Linnaeus)
White perch	<u>Roccus americanus</u> (Gmelin)
Winter flounder	<u>Pseudopleuronectes americanus</u> (Walbaum)
Yellow perch	<u>Perca flavescens</u> (Mitchill)

(American Fisheries Society 1960)

The striped bass was one of the most prized fish of both the Indians and the early settlers. They run into the saltmarsh creeks and ponds in late June on a rising tide. When the tide starts to fall they return to deeper water with a rush. A traditional way to catch bass is to place a temporary blockage across the channel, leaving a gap which herds the fish into a net, or they can be speared as they go through. At Muskeget Island, west of Nantucket, both a long point and an inner bay give a double choice of fishing spots. I have seen large masses of bass three or four feet long (.9 - 1.2m) rooting the bottom of the inner bay. Muskeget is an island entirely created by the ocean waves. There must have been many such islands formed and washed away as the ocean covered the shoals.

The technique above has also been described for catching sturgeon in large rivers. This is a particularly easy type of net to make. A sturgeon net has a mesh about twelve inches (30.5 cm) square and need be only three or four meshes deep; it does not require many floats or weights.

The smooth dogfish or shark is like the skate, good food and easy to catch, but with no hard parts to survive over the years in an archaeological site.

Getting to a better documented species we come to the alewife. Tradition has the Indians using the alewife as fertilizer for their corn. Some people now doubt this. It certainly is the easiest fish to catch with the most primitive equipment and in great numbers. Alewives figure prominently in the accounts of early settlers. This may be because they were such an important food. Herring cured in various ways were as common a food for the English of that time as hamburgers are for us today. Mada-ket ditch on Nantucket was dug by the combined efforts of settlers and Indians with the provision that the Indians could have half the catch of a fishweir in Long Pond if they tended it diligently. Of course no one recorded if they did or not. This herring run is still in use today. I estimate that twenty thousand fish run through it yearly. The catch today is very small as is the market for alewives.

Alewives are a schooling fish, that is they move in large groups which act like one large fish. That is why they can be herded so effectively into a fishweir. When running up a very small brook they may then separate and move individually through shallow stretches. They are easily scooped up here, but there is communication among them and unless some get through the run they will stop until the way is clear.

White perch run in the opposite direction, between the runs of alewives. In spring the alewives go from salt water into the freshwater ponds to spawn. The white perch go from the fresh water to spawn in the brackish water of the estuaries. They bite readily at baited hooks. The Indians are assumed to have used nets to catch some of these small fish. I would like to know about the type of net they made. Nets are quite bulky compared to spears and lines. A lot of labor goes into the making of a net, particularly when one has to manufacture the cord as well as knit the mesh. Natural fibre nets require a lot of care in drying and must have a safe storage place in seasons when not in use. Nets must be protected from the weather and from rodents.

In Nantucket and Martha's Vineyard the ponds of the south shore have been connected to the sea by digging a ditch across the barrier beach when the pond level is high. The water rushes out, cutting a wide channel and dropping the pond level to that of the ocean. This allows the alewives to enter and the eels to leave. Fishing has to be done in the short time before the channel gets too wide and deep. Our fishermen always thought that this practice originated with the Indians.

People using primitive equipment must depend on the greatest concentrations of fish to be successful. When the surf breaks over the barrier beaches of the fresh or brackish water ponds, eels, white perch, and winter flounders swarm at the very edge of the sand, particularly at night. Eels may even be picked up by hand during the day when they are left stranded between surges of the ocean waves crossing the beach. In fall the inner beach is where the mature eels, in breeding condition with large eyes and bronze and silver colors, cruise back and forth waiting for the storm swells to wash over the beach. These eels were called "eeshaws" by the Indians and are still called by that name at the Islands. This is one of the best reasons we have for thinking that some of the fishing methods and gear originated with the Indians rather than being of European origin.

Eels were a staple food of the early settlers and appear to have been for the Indians. In winter, eels hibernate in certain muddy locations. There they can be speared through a hole cut in the ice. The prongs of this spear terminate in hooks which catch the eel when the spear is pulled back, instead of ending in a sharp barbed point as in the European trident.

There is a spring run of eels as well. During the first warm rain after the ice has melted, eels which have wintered in the springs work their way to salt water. They progress slowly, and in the daytime or when the temperature drops they shelter in aquatic vegetation. Again, finding and catching them is very easy.

When salt water comes into the ponds, yellow perch and pickerel go to the opposite ends of the pond. Both take a hook very well and pickerel often lie motionless at the surface near weed beds and can be speared from a canoe.

Ocean fishing centers on the codfish. As the first European codfishermen left no records, we don't know when their influence began to be felt over here. Wire fishhooks were a most important trade item for primitive people and could increase their catch enormously. William Wood wrote in 1633 that their lines were "wrought of stronger materials than ours" (Wood 1977:107). The records of the early settlers show that the Indians became very good codfishermen, but at that time they were doing this for trade rather than for subsistence. The fact that large cod used to strand on the outer beaches in fall complicates relating their remains in middens to prehistoric deep-sea fishing. A few fish vertebrae used as ornaments could have come from stranded fish. However, many accounts show that the Indians did use their canoes in the ocean, and they went back and forth between Nantucket and the mainland regularly. It is not realistic to expect to find deep-sea fishing equipment discarded in refuse pits, because it usually would have been lost to extra large fish before being completely worn out.

Pollack and hake are caught with the cod, and the hake are subject to stranding even more than the cod. Mackerel go through extreme cycles of abundance and scarcity which have not been related to either weather conditions or fishing pressure. Some years mackerel are plentiful and swarm into harbors and creeks in great numbers. Along with herring they are important food fish for the larger predators of the ocean. These predators, along with marine mammals, drive the mackerel into even the smallest creeks and marshes. William Wood noted that so many might be stranded that people could carry away all they could use (Wood 1977:63). When not disturbed, mackerel bite readily at bait.

Tautog, a fish inhabiting rocky areas, has been found in middens on Martha's Vineyard (Ritchie 1969). This is a little surprising because tautog don't come close to shore at Nantucket. They have a hard mouth with heavy rounded teeth for crushing shellfish. The Indian gear for catching these must have been more sturdy than some of the bone hooks which we have seen. Tautog is the Indian name, the common name, and the scientific name, an unusual occurrence in nomenclature.

Unless the balance of fish populations has been changed by modern fishing methods, sea robins should show up somewhere in middens. The skulls are durable and distinctive. Sea robins are edible and it is hard to do any bottom fishing without catching them. They also strand when arriving in early spring.

Scup are in the Martha's Vineyard middens (Ritchie 1969). Some follow the inner shores of the depositional sandy points. Most are caught in deeper water. They are great bait stealers and not easily hooked. Scup are quite numerous and are around throughout the summer.

Sea bass go with the scup, more often in schools, and are not found so frequently. Having a large mouth, they take a hook more easily and they grow larger.

At various times in Nantucket history bluefish have had an important role. The older fishermen thought that bluefish were important to the Indians, but I never remember any reference as to how they caught them. The dory fishermen found long lines of passing bluefish, and getting near enough alongside could toss an eelskin lure near enough to catch them. These fish could have been speared from a canoe. I never saw an Indian artifact which could have been used as a lure.

Bluefish have disappeared from Nantucket waters for varying periods of time, according to legends and records. The Indian legend says that in prehistoric times they disappeared and an old chief prophesized that when Nantucket suffered a disastrous fire the bluefish would return. The legend is still remembered, and at times events have convinced some people that it is true.

To summarize our knowledge of Indian fishing, it seems fair to say that we don't have a great deal. Fishermen have always been too secretive to leave many records of their activities, in contrast to professional explorers. Most of the tools of the trade are too perishable to survive long periods of time. Any remnants surviving are unusually important, as fishing is so involved with the culture of the people. From any material which survives some activities can be inferred. The making of nets is so often a family affair, and their use requires the cooperation of several or more individuals. Therefore, possession and use of large nets may require a society as stable as one engaged in agriculture.

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OBSERVATIONS ON METHODS OF COLLECTION, USE, AND SEASONALITY OF SHELLFISH ON THE COASTS OF MASSACHUSETTS

Elizabeth A. Little

INTRODUCTION

In this paper I explore the species, the means and the seasons of collecting shellfish at Nantucket. Many of my findings are relevant to other coastal areas, and some differ from those described in the archaeological literature (Ritchie 1969; Perlman 1973; Braun 1972, 1974; Osborn 1977; Snow 1980; McManamon 1984). As my primary source of information, I have interviewed J. Clinton Andrews, who was for 30 years a commercial fisherman out of Nantucket. Ken Kelley of the Shellfish and Marine Department,

Town of Nantucket, has contributed current data on shellfish at Nantucket, and D. Craig Edwards of the Zoology Department, University of Massachusetts, Amherst, has provided guidance to the current Latin names for shellfish. In addition to consulting ethnohistoric sources for eastern Massachusetts, current shell guides (Rehder 1981; Abbott 1974), and Euell Gibbons (1964), I have relied on my own experience with shellfish. My family has always experimented with wild foods, and I have personally gathered, cooked, and eaten quahogs, clams, oysters, scallops, sea urchins, periwinkles, mussels, whelk, surf clams, razor clams, blue crabs, and Jonah crabs on the coasts of Maine, Massachusetts, New York, and Virginia.

SHELLFISHING

THE RELATIVE IMPORTANCE OF VARIOUS SPECIES OF SHELLFISH

Because modern shellfish habitat and species abundance vary annually, we may not assume that they have not varied over the past 2500 years. In addition, archaeologists at Nantucket have seldom examined the chronology of deposition of shell middens, as Ritchie (1969) has done by studying individual components of middens at Martha's Vineyard.

With these limitations, the shellfish species found at most prehistoric middens in Southeastern Massachusetts are generally the same as today's commercial species. Figure 9 shows the modern habitat at Nantucket for quahogs, scallops, oysters, and clams, which, together with whelk, are today's commercially important shellfish. Figure 9 also shows the zone within one kilometer of this shellfish habitat containing all the prehistoric shell middens at Nantucket, some as old as 2500 years. Table 5 lists the shellfish species found at prehistoric sites at Nantucket, Martha's Vineyard, Connecticut, and Cape Cod, along with the percentages of archaeological sites containing each species. Quahog, oyster, softshell clam, scallop, and whelk lead both the prehistoric and modern lists.

Whelk, moon, and oyster drill are carnivores, with a preference for quahog, soft-shell clam, and oyster, respectively, and boat shells and limpets often live attached to other shells. Their presence in shell middens may be adventitious. Additional reasons for shellfish species being in shell middens other than as human food refuse will be discussed below. Therefore, although all of these shellfish are edible, their presence in shell middens does not prove that they were eaten.

Early observers of New England also noted the major shellfish species. John Brereton in 1602 in the islands south of Cape Cod, listed "Muscles, Wilks, Cockles, Scallops, and Oisters...exceeding good and very great" (Brereton 1602:7,13). William Wood (1865:35) in 1634, near Lynn, Massachusetts, created this minor classic:

"The luscious Lobster, with the Crabfish raw,
The Brinish Oister, Muscle, Periwigge,
and Tortoise sought for by the Indian Squaw,
Which to the flats daunce many a winters Igge,
To dive for Cocles, and to digge for Clamms,
Whereby her lazie husbands guts shee cramms...."

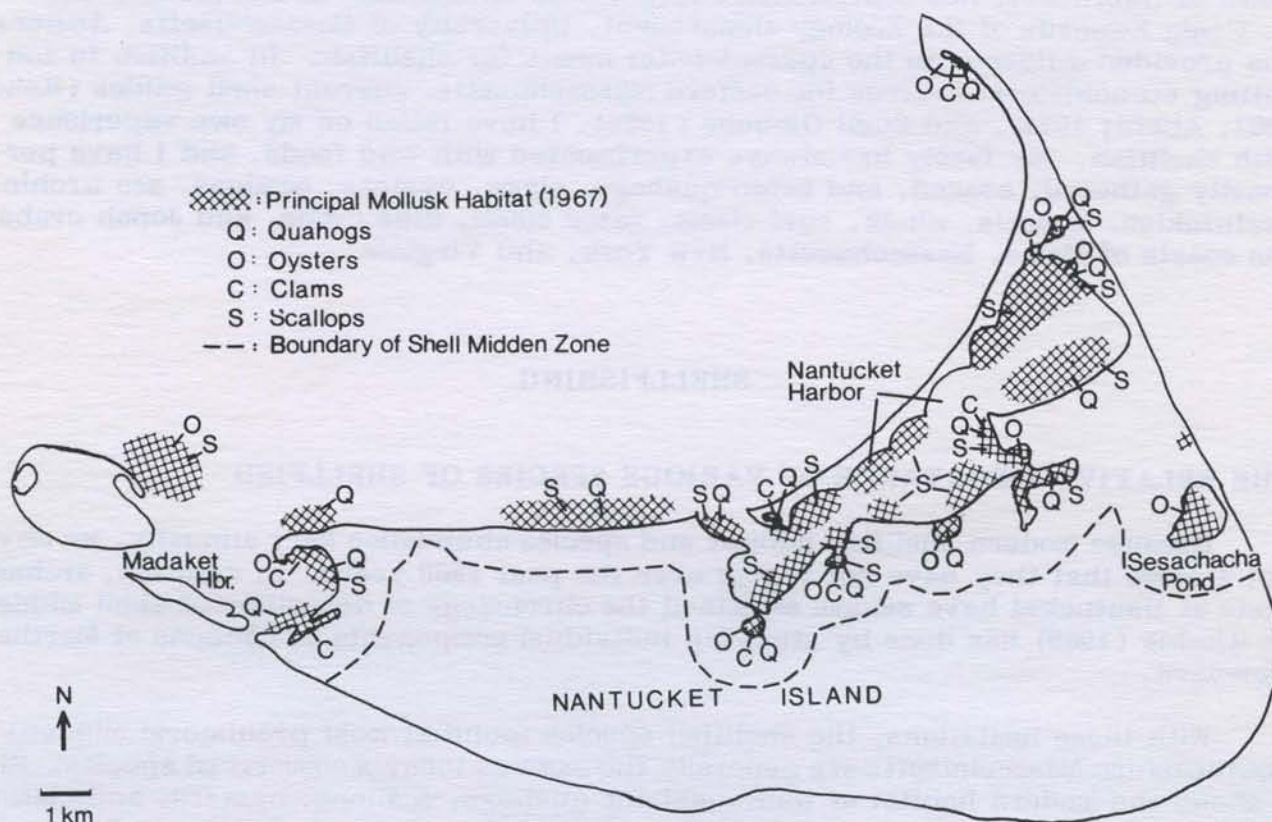


Figure 9. Principal shellfish habitat at Nantucket (after Zube and Carlozzi 1967:45; J. C. Andrews 1984, personal communication) and prehistoric shell midden zone adjacent to modern shellfish habitat.

That both Englishmen noticed mussels reflects the use of mussels for food in England. Brereton and Wood have named all of the important New England shellfish of Table 5 except quahogs.

NAMES FOR SHELLFISH

The Latin names for shellfish change with time and a common name may apply to several different species. I have revised the Latin names according to Abbott (1974), and record several cases of common name confusion. The cockle provides a good example of the problem.

Modern cockles in New England are described as "too small to be interesting, or they live in water too deep for us to get at them" (Gibbons 1964:151). Also, cockles do not occur in the Massachusetts shell middens under study here (Table 5; Barber 1982:60). I should like to make a case for cockles having been an early English name for quahogs (*Mercenaria mercenaria*).

TABLE 5

PERCENTAGE OF PREHISTORIC SHELL MIDDENS
CONTAINING VARIOUS SHELLFISH SPECIES

(+ = species present)

Shellfish (after Abbott 1974)	Nantucket (52 sites)	Martha's Vineyard (19 com- ponents)	Connecticut (18 sites)	Cape Cod
<u>Mercenaria mercenaria</u> (quahog)	77	89	94	+
<u>Argopecten irradians</u> (scallop)	48	84	56	+
<u>Busycon carica</u> & <u>B. canaliculatum</u> (knobbed and channeled whelk)	46	32	39	+
<u>Crassostrea virginica</u> (oyster)	44	79	94	+
<u>Mya arenaria</u> (softshell clam)	33	89	72	+
<u>Crepidula fornicata</u> (boat)	19	68	12	+
<u>Spisula solidissima</u> (surf clam)	10			+
<u>Polinices duplicatus</u> , <u>Lunatia</u> <u>triseriata</u> , <u>Lunatia heros</u> (moon)	8	37	6	+
<u>Mytilus edulis</u> (blue mussel)	6	16	0.3	+
<u>Geukensia demissa</u> (ribbed mussel)	4		6	
<u>Urosalpinx cinerea</u> (oyster drill)	4	11	6	+
<u>Buccinum undatum</u> (waved whelk)	2	5		
<u>Anomia simplex</u> (common jingle)	2			
<u>Ilynassa obsoleta</u> (basket)	1	16	6	+
Limpet		5		
Ark & Razor clams			+	+
Periwinkle			+	

Data sources: Nantucket = Little 1979, 1984
Martha's Vineyard = Ritchie 1969
Connecticut = Warner 1972
Cape Cod = Speck and Dexter 1948

The English seem to have used the name cockle for many of the new shellfish genera which they found in exploring American shores (Gibbons 1964:151), and one could easily confuse a quahog with a Greenland Cockle (Abbott 1974:487). Since Brereton,

traveling south of Cape Cod, mentioned oysters, scallops, whelks, mussels and cockles, but not clams and quahogs, his cockles could have been either clams or quahogs. Wood, north of the Cape, mentioned oysters, clams (presumably *Mya*, the chief bivalve north of Boston [Braun 1974; Barber 1982]), surf clams, mussels and cockles, but not quahogs, scallops, and whelks. Thus, since Cape Cod forms the northern boundary for most scallop and whelk (Belding 1909), cockles could not have been soft-shell clams or surf clams, nor could they have been scallops or whelk. Cockles could therefore have been Wood's and Brereton's name for quahogs.

Support for the hypothesis that the early English called quahogs "cockles" is provided by the 1635-1643 records that one dived for quahogs (Williams 1963), and one dived for cockles (Wood 1865). Were there quahogs north of Cape Cod in the seventeenth century, as Wood's (1865) report implies? John Josselyn, who had lived on the coast of Maine, reported in 1672 that white and blue wampum (the blue implicates the quahog) were made from a kind of "coccle" (Josselyn 1972:36), which doesn't answer our question, but definitely connects cockles with quahogs.

On the other hand, Lescarbot in 1604-1607 reported from Maine that "great sea cockles, called vignols, like snails..." were used by the Indians south of Cape Cod for making beads (Ceci 1977:169). Although the French word "coquille" translates as shell or shellfish in general, and thus differs from the English species name cockle (OED 1971:575), Lescarbot clearly meant *Busycon* (whelk), which were indeed used for beads and white wampum (Williams 1963:140). In modern Massachusetts *Buccinum* (waved whelk) and moon shell snails have also been called "cockles" (J. C. Andrews 1982, personal communication; Belding 1909).

I stand by my hypothesis that cockle meant quahog for the English in the seventeenth century. Discovery of both cockles and quahogs in the same explorer's report would falsify the hypothesis (D. C. Edwards 1984, personal communication).

SHELLFISH SPECIES AT NANTUCKET

Let us now consider some details of the gathering and use of individual shellfish species.

Quahogs (*Mercenaria mercenaria*) are an American shellfish (Grzimek 1974:179) whose range is from Texas to Cape Cod, with minor amounts north to the Gulf of St. Lawrence (Rehder 1981). Although Ritchie (1969:216) stated that at Martha's Vineyard quahogs lie above the bottom, easily visible under water, at Nantucket the shellfish live almost entirely just under the sand and mud surface and are often hidden by seaweed. According to J. C. Andrews (1985 personal communication), Ritchie may have observed quahog habitat immediately after an eel grass invasion, when, because of the thick growth of the weed, quahogs will lie above the bottom. At Nantucket they occupy a range from high tide level to a depth of 15m. They can be gathered by men, women, and children any time of the year by feeling under the sand and mud with their hands or feet; gathering would be cold in winter water (Little family; J. C. Andrews 1983, personal communication). K. Kelly (1984, personal communication) notes that "after freeze-ups they sometimes pop out in large numbers," and storm waves occasionally cast them up on beaches (Little family; Figure 10).

Roger Williams (1963:140), in 1643 at Narragansett Bay, stated that the Indians "wade deepe and dive for" this "little thick shell-fish", called poquauhock, which

implies a certain resource depletion at that time and place. After eating the meat, the Narragansett Indians would break out of the shell about a half inch of "black" (purple) shell, of which they made their purple money (wampum) (Williams 1963:140); from this use came the shellfish's Latin name, *Mercenaria mercenaria*. At Nantucket, quahogs were sometimes called "pooquaws" (Trumbull 1902:234), and on the Cape and Islands are still called quahogs. At Lynn, Wood (1865:35) described Indian squaws diving for what he called cockles in the winter. Elsewhere at times the quahog has been called "Hens" (Williams 1963:140), and "hard shell" or "chowder clam," "cherry-stone," or "littleneck," especially around New York City.

J. C. Andrews (1983, personal communication) notes that quahog shells in Nantucket Harbor have a greater depth of purple color than those from Madaket Harbor. Quahogs near Chatham were said in 1870 to have had little or no purple color (Gould 1870:134), and Falmouth was called Suckanusset, which is said to mean "where the black wampum is found" (Zinn 1984:8). Here is an environmental variation which would have had a cultural effect. Where are the quahogs with the most purple found, and why? Another issue raised here is color-blindness (B. Simon 1985, personal communication).

Scallops (*Argopecten irradians*) spend the warm months protected in eel grass in deep water. In the fall, eel grass leaves die, and, during the first large fall or winter storm, great quantities (wagon loads [Belding 1909:85] or tons [D.C. Edwards 1984, personal communication]) of scallops are washed ashore in windrows (Fig. 10), and would have been a major, if unpredictable, resource. These observations conflict with Perlman's (1973) assertion that summer was the season for gathering scallops, and raise questions about Braun's (1974) suggestion of the use of weirs. Small hand nets are useful for collecting scallops in the water. Scallops became scarce with the disappearance of eel grass in the thirties (Ford 1982:128; Setchell 1929), and I can find no Massachusetts word for them. Their use as a food fluctuates also. The Nantucket scallop industry started only in 1881 (Nantucket Argument Settlers 1966:51; Belding 1909:111), and Gookin (1951:60) reported that they were used only for fertilizer in the early nineteenth century on Martha's Vineyard. Scallops have a two year lifespan. Scallop shells, which are fragile, are found in very minor quantities in prehistoric Nantucket shell middens.

Channeled and knobbed whelk (*Busycon canaliculatum* and *Busycon carica*), found between Cape Hatteras and Cape Cod (Rehder 1982), feed chiefly on quahogs. They spend the winter in deep water and at Nantucket come inshore near low tide level in early summer (late June) to spawn. Some are still around through October, a few are found year round, and storms occasionally wash them ashore (K. Kelley 1984, personal communication; J. C. Andrews 1982, personal communication). Whelk is tasty if tough, and at present a commercial fishery at Nantucket supplies the Italian food market in New York City. The shells, rosy or peach colored inside, are re-used by hermit crabs, and sometimes are carried inland by seagulls and dropped on roads or on the few rocks at Nantucket. Fortunately for archaeology, the abundance of seagulls is a post 1920's phenomenon at Nantucket, according to J.C. Andrews.

Whelk shells, either in a layer, as one or two whole shells, or as worked columella, have been found associated with 11 prehistoric Nantucket burials (Bullen and Brooks 1948; Anderson 1977; B.H. Stockley 1978, personal communication). A Nantucket Indian legend recounts that the body of a malicious sorcerer would not stay buried until a whelk shell was placed in each of its hands (Jenks 1827).

AREAS WHERE SHELLFISH ARE CAST ASHORE

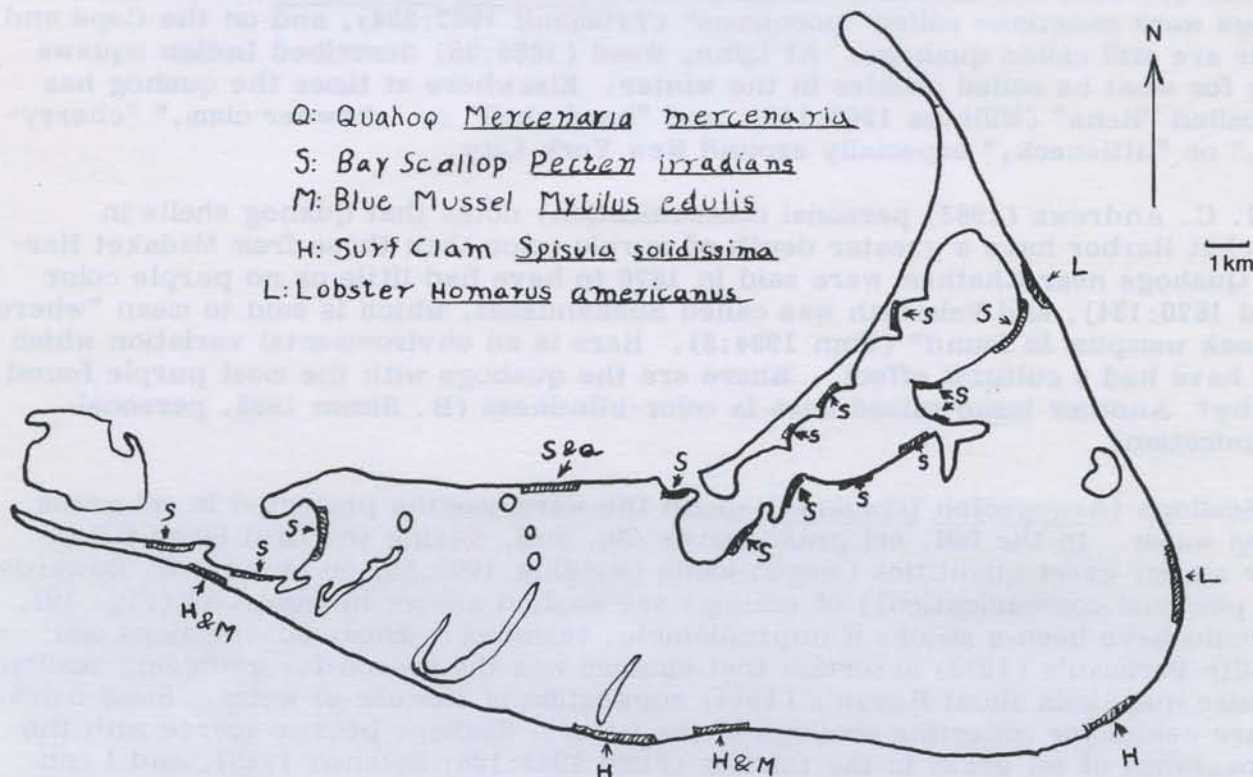


Figure 10. Areas along the shores of Nantucket Island where Quahogs, Bay Scallops, Surf Clams, Blue Mussels, and Lobsters are most often cast ashore by storms (map drawn by J. Clinton Andrews, 1984, based on data from his records, 1947-1985). "The shellfish washing up on the south shore might be anywhere, but they concentrate where I have marked. These concentrations shift along shore but should usually be in the general areas. Those in the harbor would only vary a few feet" (J. C. Andrews 1984, letter).

In early historic times at Long Island, NY, and southeastern New England, whelk, also called "periwinkle" or meteahock, was gathered in summer for winter production of white wampum (Williams 1963:140,179,180; Ceci 1977). Pits filled only with whelk shells have been found at Nantucket and Long Island (Nantucket Historical Association Files; Ceci 1977).

Oyster (*Crassostrea virginica*) is to many the tastiest shellfish of all. Avoiding oyster in months without r's is a rule (Gibbons 1964:13) which applies to European oysters; ours, which grow on firm, clean surfaces from mid-tide level to 12 meters deep (Belding 1909; Rehder 1981), are available and edible in every month (J.C. Andrews

1983, personal communication; Little family). Its abundance at Nantucket fluctuates; it is not a major resource today, but oysters were abundant in the past, on the evidence of oyster shell frequency and density in prehistoric shell middens. Although Sesachacha Pond was a freshwater pond in 1909 (Belding 1909), its brackish water today supports live oysters seven meters below the pond surface. Ancient shells dredged up from the pond bottom are often of giant size. Because of the great amount of oyster shell in middens on the pond borders, J. C. Andrews believes that Sesachacha Pond may once have had a natural opening to the sea. At one of these sites, a radiocarbon date of 1680 ± 80 B.P. was obtained (Little 1984). The name for oyster in Massachusetts, apwonnah or opponenauhock, meant "the shellfish which are for roasting" (Trumbull 1902:304; Cotton 1830).

Softshell clams (Mya arenaria), which are less common in middens on Nantucket than on the Vineyard, are not a major shellfish species at Nantucket today, but there is a town-regulated winter family clamming season, and there has been commercial harvesting for local consumption in the past (Andrews 1983, personal communication). The Littles (at Long Island), and J. C. Andrews (at Nantucket) consider softshell clams of late winter and early spring to be superior in quality to those of summer and fall, but clams are available all year round between mid-tidal level and one meter below. Although Ritchie (1969) called them "long clams", on Nantucket, clams are called "clams", "softshell clams", or "steamers", and Olney Dunham of Nantucket called large Mya "fryers". At Nantucket clams were sun-dried by the original inhabitants, and 40 sun-dried clams strung on a string were used for money, equivalent to one "copper" (Crevecoeur [1782] 1971:101,106; Mourt 1832:51). Roger Williams (1963:139) called them "a sweet kind of shellfish, which all Indians generally over the Countrey, Winter and Summer delight in: and at low water the women dig for them: this fish, and the naturall liquor of it, they boile, and it makes their broth and...their bread seasonable and savory". Their Indian name was sickissuog, or sukkissuog, "they spit or squirt" (Trumbull 1902:234; Cotton 1830).

At Lynn in 1634, Wood reported that the Indian squaws in winter used "to digge for Clamms" (1865:35), and that "Clamms or Clamps is a shel-fish not much unlike a cockle, it lyeth under the sand, every six or seaven of them having a round hole to take ayre and receive water at. When the tide ebs and flowes, a man running over these Clamm bankes will presently be made all wet, by their spouting of water out of those small holes: These fishes be in great plenty in most places of the countrey" (Wood 1865:37).

Boat shells (Crepidula fornicata), although small, are common and very tasty. Daniel Haynes of Nantucket calls them "sweet meats", and the Maria Mitchell Association recommends their use as salt water aquarium fish food. They attach themselves to the shells of oysters and scallops (and not to shells of the subsurface dwelling clams and quahogs) (J. C. Andrews 1984, personal communication). Whether boat shells arrived at middens as hitch hikers or were gathered as food is an open question. J. C. Andrews reports places on the harbor where a large number of boat shells, some alive, wash up regularly. If Indians ate them, he would expect to find occasional pure boat shell midden patches, but such deposits have not been reported as yet.

Surf clams (Spisula solidissima) are difficult to find at Nantucket, although the shells are common on the South Shore of the Island. After fruitless snorkling off the South Shore by my family in the summer, we finally asked Jose Reyes of Nantucket, who told us that surf clams are washed up (Fig. 10) by fall and winter storms. Finally, a southerly hurricane of August 1977 washed some ashore for my family, and

they tasted as delicious as Euell Gibbons (who calls them also Hen Clams) had promised (Gibbons 1964). Wood (1865:38) mentions clams as "big as a pennie white loafe, which are great dainties amongst the natives", and reported that the sea, at Nahant, "after stormes casts up great store of great Clammes, which the Indians taking out of their shels, carry home in baskets" (Wood 1865:44).

Although these shells frequently appear in small numbers in Nantucket middens at least four kilometers from the beaches where the clams were probably cast up and removed from their shells, I do not think the middens give evidence for the use of surf clams for food. Barber (1982:60) proposes that since cod stomach contents often include surf clam shells, prehistoric use of cod can account for surf clam shells in middens. Surf clam shells might also have been used as tools (hoes) or containers, as they are used today for digging holes at the beach and for soap dishes or ash trays.

Moon snail (Polinices duplicatus, Lunatia heros, or Polinices triseriata) shells are rare but present on archaeological sites (Table 5). Moon snail shells, like whelk, provide hermit crab homes, and D. C. Edwards (1984, personal communication) suggests that drilled holes in moon shells in middens would imply that Indians harvested hermit crabs. However, since few moon shells in middens are whole, prehistoric Nantucketers appear to have broken the shells for access to the snails. Most moon snails south of Cape Cod live in deep water and come inshore to spawn and eat clams in the summer, but some can be found most of the year at Nantucket (Rehder 1981; Edwards and Huebner 1977; Ken Kelley 1984, personal communication). Belding (1909) called them "winkles" or "cockles".

Blue mussels (Mytilus edulis) grow on rare boulders in the Sound and harbors at the mid-tidal level, or they grow in large clusters in water as deep as 12 meters near shoals off the south shore (J. C. Andrews 1983, personal communication). After storms, clumps of live mussels sometimes wash ashore (Fig. 10). Although the shells are rare in middens (Fig. 9), at least two middens consisting wholly of mussel shell have been reported at Nantucket (Nantucket Historical Association Files). Mussels made the Pilgrims sick (Mourt 1802:205), and have been served in New England restaurants only for the past 20 years.

The ribbed mussel (Geukensia demissa), formerly VolSELLA plicatulus (Ritchie 1969), grows on mud or peat in salt marshes or bays, and single shells commonly appear in midden debris.

The habitat of the waved whelk (Buccinum undatum) south of Cape Cod is 8 or 9 klm offshore in deep cool water. Hence, while hermit crabs occasionally use the shells, the snail is seldom seen alive at Nantucket. This is a pity, because this gastropod is the common edible whelk of Britain (Rehder 1981; Gibbons 1964), and is sweet and delicious (Little family). The waved whelk is rare but present in prehistoric Nantucket middens (Table 5).

Species which appear infrequently in middens can sometimes provide evidence of the prehistoric environment. The Atlantic Oyster Drill (Urosalpinx cinerea), a major carnivore preying on oysters, lives in or near oyster beds; the Common Jingle Shell (Anomia simplex), a bivalve, lives attached to other shells or hard substrate; the Basket or Eastern Mud Whelk (Ilyanassa [or Nassarius] obsoleta) lives on mud flats; limpets live on rocks; ark and razor clams live in sand or mud, but the shells of the razor clam are too fragile to survive and this rapid digger is difficult to capture. The periwinkle, a gastropod which lives on rocks, must be identified carefully because,

like cockle, the name has been used for many things, from *Busycon* (Williams 1963) to a possibly introduced European snail, *Littorina littorea* (Barber 1982:21,61), or a native American snail, *Littorina obtusata* or *L. saxatilis*.

CONCLUSIONS: METHODS AND SEASONS

METHODS OF GATHERING SHELLFISH AT NANTUCKET

Hand collecting, feeling with one's feet, diving, using collecting nets, digging, or raking (Ritchie 1969; Braun 1974; Rainey 1956) are all possible methods of gathering shellfish in the shallow waters of Nantucket. In addition, as became increasingly apparent during the research for this paper, scallops, surf clams, and mussels primarily, but also whelk and quahog, can be gathered live from ocean and harbor beaches where they have been cast up by storms. With the exception of scallops, most of these shellfish close up their shells when disturbed, and can survive out of water for several hours or more. Whales (Little and Andrews 1982), fish, and lobsters are also liable to be washed up on certain Nantucket beaches, dazed but not necessarily dead (J. C. Andrews 1984, personal communication). Despite Osborn's (1977) skepticism, a seafood harvester who collects these gifts of the sea promptly after a storm, before birds or insects get to them, increases the quality and decreases the cost of his food.

The manner of shellfish gathering can affect the species composition of shell middens. An intensive search by several people in a productive habitat for a certain species of shellfish during the proper season should result in a bucket or so of one species for an hour of work. The result in a shell midden would be a patch of shells of one species, with perhaps a predator shell or two and some hitchhikers. Such patches of single species are common in prehistoric shell middens (Speck and Dexter 1948; Rainey 1956; Ritchie 1969; Warner 1972; Little 1983; McManamon 1984). At the other end of the continuum, foraging for anything edible a group can find would provide a variety of shells for the midden, not necessarily all from the same habitat. This method implies either that bouillabaisse (a soup of many seafoods) is on the menu, or that there is enough stress on the foragers or the shellfish to require an extensive search with few finds of any one species.

SEASONS OF GATHERING SHELLFISH AT NANTUCKET

Since it is possible to obtain a few of most of these species at any time of year, their mere presence in a shell midden does not give evidence for the season of collection. However, Table 6 shows the easiest time for collecting a given species in quantity at Nantucket without the use of high technology. Oysters, softshell clams, and quahogs would be available all year round, although quahogs and possibly oysters would be easier to gather in summer. Most whelk would be available in the summer. Scallops, surf clams, and mussels are most easily gathered near shore after the first big storm after a period of calm, which usually occurs in the fall and winter. Quahogs and whelk can also be washed ashore by storms. The seasons underlined for certain species in Table 6 are those for which ethnohistoric evidence of Indian shellfishing has been presented here. Note that they do not conflict with our modern data. Thus, harvesting shellfish any time during the year, with limited seasons for certain species, has been reported today at Nantucket and is supported by ethnohistorical evidence.

TABLE 6

SEASONALITY OF SHELLFISH AT NANTUCKET:
MOST CONVENIENT TIMES TO GATHER

	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Softshell Clams	XX											
Oysters	XX											
Quahogs	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	* X	* X	* X	* X	* X	* X	* X	* X	* X	* X	* X
Whelk			XXXXXXXXXXXXXXXXXXXX					*	*	*	*	*
Scallops							*	*	*	*	*	*
Surf Clam							*	*	*	*	*	*
Mussels (Blue)							*	*	*	*	*	*

X = available from natural habitat

* = available from beach after large storm

_____ = ethnohistoric reference to exploitation during this season

SUMMARY

By a comparison of prehistoric midden shells with ethnohistoric sources and modern shellfish gathering, I have summarized the general characteristics of shellfish collecting at Nantucket, and noted differences with methods described in the archaeological literature. The data gathered here for shellfish harvesting at Nantucket form a basis on which to build further studies and analyses (Bennett 1955) of prehistoric shell middens at Nantucket. This framework can also help explain similarities to and variations from the seasonal activities and settlement patterns being reported for prehistoric coastal sites at Long Island, NY, Cape Cod, Massachusetts Bay, and Maine (Ceci 1982; McManamon 1982, 1984; Luedtke 1980; Barber 1982; Yesner 1980; Sanger 1982; Spiess, Bourque, and Cox 1983).

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SEVENTEENTH CENTURY SOUTHERN NEW ENGLAND INDIAN AGRICULTURE

Laurie Lee Weinstein

"They began now to gather in the small harvest they had, and to fit up their houses and dwellings against winter, being all well recovered in health and strength and had all things in good plenty... Besides, they had about a peck a meal a week to a person, or now since harvest,

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Indian corn to that proportion. Which made many afterwards write so largely of their plenty here to their friends in England, which were not feigned but true reports." (Bradford 1952:90)

William Bradford was referring, of course, to the first Thanksgiving, at which time the Pilgrims and their neighbors, the Wampanoag Indians, commemorated the first harvest. Although we do not know the specifics of the feast, we do know that Indian corn was a significant entree on the menu, as the quote from William Bradford indicated. In addition to corn, the Pilgrims probably ate Indian beans and squashes on Thanksgiving.

These crops, corn, beans and squash, are the familiar Amerindian triad of vegetables which were widely grown in the Americas. Many of these crops have common origins.

NORTHEAST CULTIGENS

The northeastern native crops are probably descendants of Mesoamerican cultigens. The route of diffusion to the northeast is unknown. Corn may have spread from Mesoamerica to the American southwest where it mixed with races of corn that were ancestral to Hohokam, Basketmaker III, and Pueblo corn. From the Southwest, the hybrid may then have diffused across the Plains to the Northeast (Ceci 1979:47).

The first evidence for corn in New England is at the Roundtop site in Broom County, New York (Ritchie 1969:xxv) with a radiocarbon date of A.D. 1070 \pm 60. Corn cob fragments and kernels of Northern Flint corn were found, along with beans and squash (Ritchie 1969 xxv-xxvi). These crops may have entered the Northeast as a triad since they occur together at Roundtop (Tuck 1978:324).

Regardless of the route taken, when cultigens entered the Northeast they did not suddenly transform culture. The northeast Indians were "broad spectrum" (Flannery 1971) hunters, gatherers, and fishermen; that is, they ate a variety of foods. Agriculture was merely added to this broad spectrum economy. Eventually farming occupied a prominent position in the native economy.

CORN

Northeast Indian corn (*Zea mays*) is called 8-rowed Northern Flint corn, and is a variety within the Maiz de Ocho race of corn. It probably evolved originally from teosinte, a wild Mexican grass which Galinat (1971, 1977, 1978, 1979) and Beadle (1980) now believe is the wild ancestor to all domesticated corn. Early varieties of corn in the southwestern United States were 10-, 12-, and 14-rowed varieties such as Nal Tel and Chapalote. However, it was 8-rowed Maiz de Ocho that spread most successfully into the Midwest and East (Galinat and Gunnerson 1963). As Maiz de Ocho moved north and east, adaptations to cold climate and short growing seasons increased, and the result was Northern Flint corn.

Ceci (1979:53-55) discusses some of the peculiar characteristics of Northern Flint corn. The corn is relatively short: 1.5-1.8 meters tall. It is multi-stalked and bears two ears. These ears are near to the ground. Low ear placement is a result of early flowering which is necessary in areas with a short growing season.

Tillers, or sucher shoots near the base, help bring nourishment to the corn plant. Thick husks, kernel hardness and dark kernel colors may also have improved the corn's tolerance to cold.

BEANS AND SQUASH

There is comparatively little information about the origins, evolution and requirements of beans and squashes. Like corn, beans and squash are also of Mesoamerican origin. Wild runner beans made their appearance sometime between 8,700-6,700 B.C., while pumpkins were domesticated around 8,000 B.C.

Of the four species of cultivated beans in the New World, only one species was grown in the Northeast. This species is Phaseolus vulgaris and it includes many varieties, including navy, red kidney, pinto, vining bush and erect forms. We do not know, however, which of these varieties were grown here. Champlain, for example, stated that native New Englanders grew "Brazilian" beans, but his description is too vague for classification (Kaplan 1965;1981, personal communication).

Squashes were probably first domesticated for their edible seeds (Whitaker and Cutler 1965:344), because the early Mesoamerican squashes had bitter flesh and skins. Later, the storage organs of the squashes were recognized for their food value. Five different species of squashes were grown in the New World. One of these species, Cucurbita pepo, was grown in New England. Cucurbita pepo included several varieties: summer crook neck, zucchini, white bush scallop, and pumpkin. All of these varieties were grown in New England.

OTHER CULTIGENS

Other cultigens of southern New England Indians included tobacco (Williams 1936:99; Champlain 1905:87), gourds (Thomas 1979:99), and the Jerusalem artichoke (Champlain 1905:87; Smith 1905:244).

REQUIREMENTS FOR AGRICULTURE

A recent research interest of many anthropologists is the examination of both prehistoric and contemporary agriculturally-based societies. Their goal is to describe how agriculture "fits" into society; what is its relationship to a people's settlement strategies and their social and political organization? Their research findings can be used to propose several "requirements" for agriculture which may illuminate the New England Indian economic system. These requirements include the following:

- 1) Some degree of sedentism.
- 2) Appropriate technologies.
- 3) Ability to recognize plant potential.
- 4) Scheduling of all economic activities.
- 5) Certain forms of social, political, and religious organization.
- 6) Certain forms of land tenure systems.
- 7) Some means of restoring soil fertility.

SEDENTISM

Domestication requires at least a semi-sedentary way of life. People who are continually on the move don't have time to experiment with crops (Watson and Watson 1971:4-5). Living in small village communities offers advantages to a predominantly

agricultural people. Such communities group houses and storage bins together, and provide protection for villagers and their food supplies (Watson and Watson 1971:4-5).

The southern New England Indians were somewhat sedentary according to Roger Williams; "They reside near their cornfields spring and summer and remove to warm valleys where they winter" (Williams 1936:127-128). Descriptions written by early explorers (Pring 1905:58; Verrazano 1905:19) indicate that Indians left their coastal habitations intact when they ventured inland to hunt in late fall. According to Verrazano, "They change their habitations from place to place...This is easily done, as they need only take with them their mats and they have other houses prepared at once" (Verrazano 1905:19). The Indians returned to their coastal dwellings in spring in time for planting, and resided there until fall.

TECHNOLOGY

Every economic pursuit requires a technology. The kind of agricultural tool needed depends upon the system of land use (Boserup 1972:23). Long and sectional fallowing are usually associated with dibble and hoe cultivation while short term fallowing is often associated with the plow and draft animals (Netting 1971:2).

Agriculturalists also require certain kinds of facilities (Flannery 1971:83), or items to help transport and store food. Storage facilities are important to agriculturalists; survival through winter may depend upon the ability to store surplus grain.

Southern New England Indians worked their fields with hoes, spades or flattish stones used for root digging, and stone dibble tools or corn planters (Fowler 1954; Russell 1969-70). Roger Williams stated that there were three kinds of hoes: a "hoe" of unknown general use, a weeding hoe of either quahog shell or deer scapula, and a breaking-up hoe which was triangular in shape and probably used to help tear out the fallen trees.

Documentary and archaeological evidence exists for the use of storage facilities. Williams (1866:120) indicated that the Narragansett dried chestnuts and preserved them in their "barnes" for a "dainte all the year." The Narragansett also dried acorns, and if the corn harvest was insufficient to tide them over till summer, acorns were used in corn's place. These were boiled and then dried for later consumption (Williams 1866:120-124). Both corn and acorns were processed with mortars and pestles.

Corn was dried upon "heaps and mats" for "many days" before it was stored (Williams 1866:124). It was covered with mats at night and then opened up during the day to expose it to the sun (Williams 1866:124).

Lorraine Williams (1972:77) describes the archaeological evidence for these "barnes" or pits at the Ft. Shantok site in Connecticut. Sometimes one pit might have a sequence of uses: first as a storage bin for vegetables, then as a refuse pit after the food supply was exhausted.

RECOGNITION OF PLANT POTENTIAL

The evolution of agriculture indicates that man realized the benefits to be gained through experimentation and manipulation of plants. Many problems, however, first had to be overcome. For example, the productivity of potential domesticates had

to be increased to a point where they could be relied upon for the bulk of the food base.

Although we do not know the role of southern New England Indians in the domestication of crops, we do know that they had a selection process for choosing the next year's seed. William Wood explained that the Indians taught the Pilgrims how to, "cull out the finest seeds, to observe the fittest season, to keep distance for holes..." (Wood 1634:74).

SCHEDULING

Agriculture requires a work schedule to ensure that chores connected with the agricultural cycle are completed. These chores include clearing, planting, weeding and harvesting.

Trees were cut about three feet above the ground. Branches and trunks were burned and the seeds planted among the stumps (Salwen 1978:163; Rutman 1967:7).

Champlain (1922-36:327-328) described the Indian method of planting. Three to four kernels were planted in one place, and a quantity of earth was then heaped about them, using shells to move the soil. Three feet distant they planted, "as much more," and "in succession." Along with this corn they put in each hill three to four Brazilian beans of different colors. When the beans matured they interlaced with the corn.

Weatherwax (1954:70) shows the importance of the Indian method of planting. Corn hills help protect the young plants from the wind by providing support to the stalks. Moving soil in the process of making the hills also helps destroy the weeds growing near the plant. Additionally, the mingling of corn seeds in the hill promotes hybrid vigor. As the young plants grow they cross-pollinate each other.

Planting took place in April or early May when the alewives ascended the streams or when the leaves of certain trees began to "put forth" (Winthrop 1937:127).

When the corn was the length of a hand, it was time to weed. A second weeding might have been necessary when the stalk "beginth to grow high" (Winthrop 1937:127). Russell (1980:165) adds that weeding occurred in May and June and the hilling of the corn was in June and July. The Indians hoed their corn two or three times, the first two times when the fields were weeded, and the last time when the first ear had started (Russell 1980:165).

About the fourth month after planting, the green corn was fit to eat, as were the first squash and beans (Russell 1980:165). The corn was threshed as it was gathered, and dried and stored away.

SOCIAL, POLITICAL, AND RELIGIOUS ORGANIZATION

Agriculture requires certain forms of work groups and leaders who help supervise work and settle disputes over conflicting resource claims. Leaders may help distribute land and other resources. Clans and lineages may own land, and members may cooperate to plant and harvest the crops. Such groups may have rules about sharing the products.

Southern New England Indian sachems allocated land, supervised planting and harvesting and were given tribute in the form of crops and animal skins (Smith 1907:76-77; Thomas 1979:39-42). Each family probably managed its own garden land that surrounded its wigwam. However, the fields "beyond" were occasionally worked communally by large work parties of 40 to 50 individuals (Williams 1936:170). When a new field was to be made, "all neighbors, with friendly joyning they break up their fields..." (Williams 1936:107).

A flexible division of labor facilitated agribultural chores. Both men and women helped with the initial breaking up of the soil. Women were then expected to set or plant the crops, weed, hill, gather, and "barne all the corn and fruits of the field" (Williams 1936:170). Sometimes, however, men helped with these chores too, "which by the custom of the country they are not bound" (Williams 1936:170).

LAND TENURE

Agriculture requires some form of land control to regulate who plants what, when and where. Rights to resources are bound up with the way the resources are used and the degree of competition for them (Netting 1971:23; Boserup 1972).

Winslow noted that the New England sachem knew "how far the bounds and limits of his own territory extendeth and that is his own proper inheritance" (Winslow 1841:361). The sachem was supervisor and protector of the "tribe's lands. He granted rights of usufruct to his constituents.

RESTORING FERTILITY

Agriculture requires some means of controlling the land's fertility and this depends upon the intensity of land use. Fallowing, burning, fertilizing, and crop rotation are just a few of the means of enriching the soil.

Both fallowing and burning were used in southern New England. Burning had the additional function of clearing understory for deer hunting. John Winthrop Jr. described a short term fallow system among the Narragansett: "...they have everyone two fields, which after the first two years they let one field rest each year and that keeps the ground continually in hart" (Winthrop 1863:514). Champlain said of the Nauset Indians, "There were also several fields entirely uncultivated, the land being allowed to remain fallow. When they wish to plant it...they set fire to the weeds and then work it over with a wooden spade" (Champlain 1905:87-88).

Indians may have added fish to their corn hills as fertilizer. Squanto may have taught the Pilgrims this practice in the 1620's. The authenticity of this practice is doubted by some, notably Lynn Ceci (1975). She claims that Squanto learned the custom while in England, and then reintroduced it to the English in America. A contrary point of view is held by Russell (1975; 1980) who claims that fish fertilizer is aboriginal.

CONCLUSIONS

The New England Indians had distinct perceptions of the land, nature, and man's place within nature. These beliefs form a context for an understanding of Indian agriculture.

BALANCE OF NATURE

The importance of land to Native Americans cannot be over-stressed. Land was a "gift" from the Creator (Snyderman 1951:15). This gift included the animals and plants which inhabited the land. They allowed themselves to be taken so that man could survive. In turn, man must not only thank the Creator for the use of the land, but he must also thank the plants and the animals for their cooperation (Snyderman 1951:15).

Indians had their own special thanksgiving rites. Thanksgiving took the form of various ceremonials held in the Creator's and the Spirit's honor. Edward Winslow described Wampanoag thanksgiving rites: "When the Wampanoag would obtain any great matter, meet together and cry unto him; and so likewise for plenty, victory, etc. sing, dance, feast, give thanks..." (Winslow 1973:359). The Narragansett gave the Creator beads, knives, and hatchets. All of these items were thrown into the fire to ascend to him (Winslow 1974:359).

With regard to natural resources, individuals were told to "waste not." For example, an Indian who shot a deer must use as much of that deer as possible, from the hide to the meat (Jeffers 1981, personal communication). Wastefulness would incur the wrath of the deer spirits. Similar admonitions probably existed for plants, fish and whatever else was taken.

Linda Jeffers, a Gay Head Wampanoag, adds that all the Creator's works are equal. Man is no better than any other creation and he receives no special treatment. Man should, therefore, not offend the plants and animals; all should be treated with respect, as members of one's own family.

New England Indian thanksgiving rituals and supportive beliefs are similar in intent to those of other Native North Americans, whether one discusses the "First Salmon" ceremonies of the North West Coast Indians, or the admonitions of the Zuni priest to his people to "keep a good heart." All of these rites were designed to return to the earth "something" in exchange for the land's bounty.

Land had another kind of significance to New England Indians. It furnished them with an identity. Katy Bragdon (1981:104) reported that many of the Massachusetts Indian texts mention people whose self-descriptions were derived from the name of their dwelling place. Sachemships were also designated by place names (Bragdon 1981:104).

LAND OWNERSHIP

Aboriginal land rights fit native world view with its emphasis upon reciprocity. Land could not be owned by individuals. Rather, individuals could only use the land (usufruct) as needed. When someone finished harvesting their resources, the land was free for the next individual to use.

"The Great Spirit gave it to his children to live upon, and cultivate as far as necessary for their subsistence; and so long as they occupy and cultivate it, they have the right to the soil-but if they voluntarily leave it, then any other people have the right to settle upon it. Nothing can be sold, but such things as can be carried away" (Black Hawk 1932:88).

Perhaps, it is in this spirit of Black Hawk that we too should celebrate the gift of Indian corn.

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AN EFFIGY PIPE BOWL FROM BAPTIST HILL, PALMER

John P. Pretola

Analysis of the Charles W. Hull collection (Pretola 1985) revealed the existence of an effigy pipe bowl collected on Baptist Hill in Palmer, Massachusetts (Fig. 11). Representing a zoomorphic figure carved in high relief, the pipe bowl is made of polished slate. The slate is fine-grained and takes a dark green-grey color when polished. The object measures 7.4 cm tall and 2.6 cm wide at its greatest point. It has a bowl diameter of 16 mm and a stem diameter of 8 mm, and weighs 82.6 g. Internally, the bowl tapers and is 4.4 cm deep. The stem opening enters the bowl just above the bottom.

Effigy pipes of this type are generally considered to date to the late prehistoric and early Contact periods, but there are no associations with this particular pipe that would confirm this. The pipe bowl has been made a permanent part of the Springfield Science Museum's Charles W. Hull collection and has been assigned the catalog number 82/3-249.

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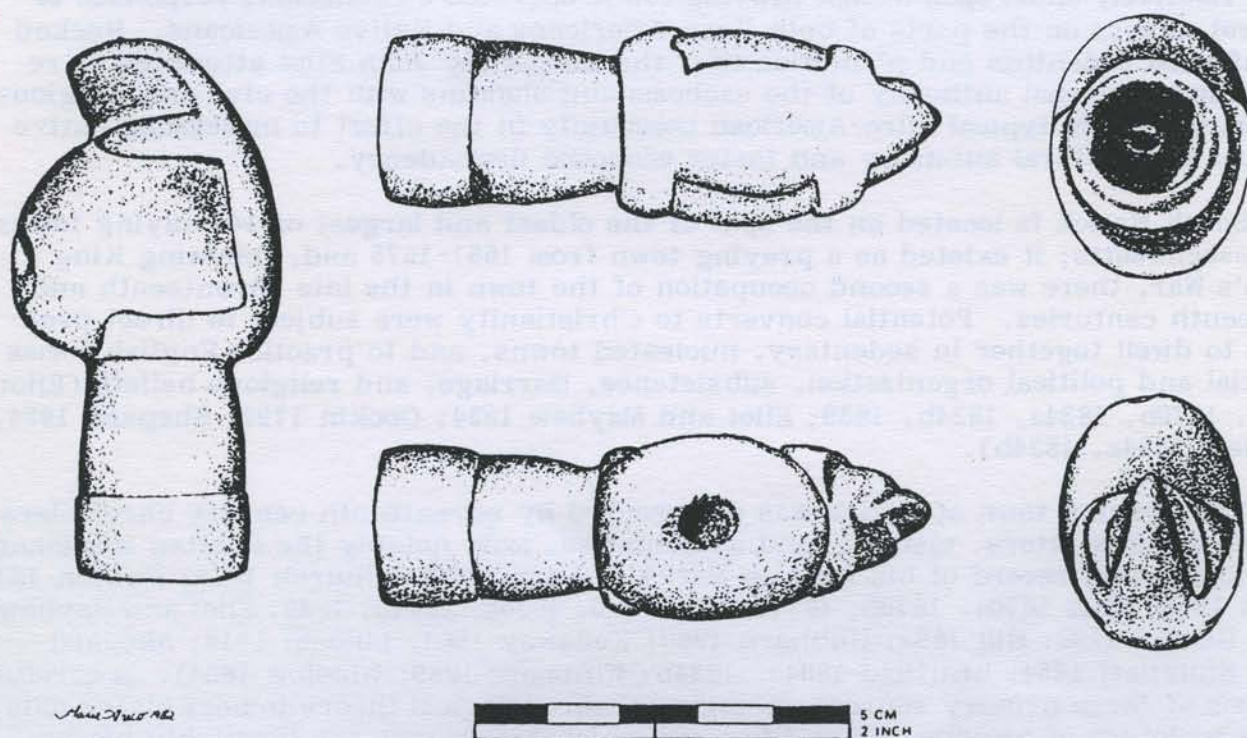


Figure 11. Effigy pipe with zoomorphic figure, from Palmer, Massachusetts.

ARCHAEOLOGICAL INVESTIGATIONS AT A MASSACHUSETTS PRAYING TOWN

Elise M. Brenner

How successful was the missionary program of the Puritan missionary John Eliot in "Europeanizing" the Native American community at the praying town of Natick, Massachusetts? How successful was the Native American community at Natick in resisting colonial policies of political domination and cultural suppression? In order to provide some answers to these questions, I conducted an archaeological survey and an analysis of the ethnohistorical documentation of the seventeenth century occupation of the mission town, or "praying town", of Natick, Massachusetts.

THE PRAYING TOWN OF NATICK

"The raison d'être of mission work is the undermining of a traditional way of life" (Beidelman 1982:212). The Christian mission was an attempt to impose complete culture change upon native communities by the imposition of European sociopolitical and cultural institutions and the suppression of native sociopolitical and cultural

institutions (Beidelman 1982; Bowden 1981; Ronda 1979). Massachusetts praying towns of the mid-seventeenth century represent a particular type of culture contact situation. For a relatively short span of time praying towns operated as conscious responses to cultural stress on the parts of both Euro-Americans and Native Americans. Backed by enforced sedentism and plantation life, the missionary John Eliot attempted to replace the traditional authority of the sachems and shamans with the civil and religious authorities of the typical Euro-American community in the effort to undermine native political and cultural autonomy and foster economic dependency.

South Natick is located on the spot of the oldest and largest of 14 praying towns in Massachusetts; it existed as a praying town from 1651-1675 and, following King Philip's War, there was a second occupation of the town in the late seventeenth and eighteenth centuries. Potential converts to Christianity were subject to direct pressures to dwell together in sedentary, nucleated towns, and to practice English forms of social and political organization, subsistence, marriage, and religious beliefs (Eliot 1670a, 1670b, 1834a, 1834b, 1839; Eliot and Mayhew 1834; Gookin 1792; Shepard 1834, Whitfield 1834a, 1834b).

The praying town of Natick was documented by seventeenth century chroniclers, colonial administrators, visitors, and missionaries, most notably the Puritan missionary John Eliot's own record of his work in Natick (Badger 1798; Church 1829; Dunton 1814; Eames 1915; Eliot 1670a, 1670b, 1671, 1809, 1810, 1834a, 1834b, 1839; Eliot and Mayhew 1834; Gookin 1792; Hill 1894; Hubbard 1969; Kellaway 1961; Lincoln 1914; Shepard 1834; Shurtleff 1854; Whitfield 1834a, 1834b; Whitmore 1889; Winslow 1834). A careful analysis of these primary sources, bringing anthropological theory to bear on the data, yields a picture of praying Indian life-ways which transcends the inevitably biased and ethnocentric interpretations of the original authors. For example, the descriptive missionary tracts of John Eliot were written to serve specific interests, (to sustain a flow of financial support from London) and therefore must be interpreted accordingly.

An analytical archaeological survey of South Natick was undertaken to locate the dwellings, storage facilities, and work areas of the praying town during its 1651-1675 occupation. The field strategy employed was chosen for its effectiveness in intercepting the products of the seventeenth century praying town occupation, as these are described in the primary sources. I will, therefore, present a brief account of the ethnohistoric data as they relate to the layout, size, architecture, and population size of the Natick praying town.

Two of the most critical goals in the establishment of the praying town, according to John Eliot, were: 1) that the praying Indians should be engaged in full-time agriculture, and 2) that they should be sedentary (Eliot 1834a). Eliot repeatedly claimed that the only path to successful conversion of the native community was for them first to become "civilized" through "Civil Cohabitation, Government, and Labor, which a fixed condition of life will put upon them" (Eliot and Mayhew 1834:227). Eliot firmly believed that the first step toward successful conversion and "civilization" was to prevent the native community from "shifting up and downe to other Wigwams" (Eliot 1834:20-21). To this purpose, "...house-lots [were] apportioned severally to every one..." (Whitfield 1834b:177). In the same year, 1651, Eliot wrote that the Natick residents were engaged in building sedentary English-style houses for themselves on the north side of the Charles River (Whitfield 1834b:138). Meanwhile, orchards were planted and agricultural fields were fenced in on the south side of the river (Whitfield 1834b:138, 177). Four years later, in 1655, Eliot wrote that "fifty lots, more or lesse" had been laid out in Natick (Eliot 1834b:270).

Daniel Gookin described the manner in which house lots were laid out along three main streets, two of which were built on the north side of the Charles River, and one on the south (Gookin 1792:180-184). According to Gookin, each house had a piece of farm land attached to it "as in English towns" (Gookin 1792:181). An arched wooden bridge with stone foundations was built over the Charles River to facilitate passage from one side of the town to the other (Gookin 1792). One large English-style house served as a place of worship, as a meeting house, as Eliot's apartment during his visits, and as a storage place for valuables (Gookin 1792).

The number of praying town inhabitants is a critical factor for the recovery of the products of their behavior. As noted, Eliot wrote in 1655 that "fifty lots, more or lesse" had been laid out in Natick (Eliot 1834b:270), and the Dedham records report sixty families settled in Natick around the same time (Hill 1893:273). Assuming at least five members per household, we can postulate a total of three hundred individuals or so living in Natick in 1655.

In addition to the ethnohistorical evidence just presented, there are also contradictory passages in the ethnohistorical literature regarding the nature of the praying town settlement pattern. Despite the fact that enforced sedentism was an integral and primary part of the missionary program, there is sufficient documentary evidence to question whether such full-time sedentism ever occurred at Natick. Gookin indicates that wigwams and seasonal mobility characterized the settlement pattern of the praying Indians. He writes in 1674:

Houses in this town are generally after their old mode...[the English houses] being more chargeable to build and not so warm and cannot be removed so easily as their wigwams wherein there is not a nail used, to avoid annoyance by fleas, and themselves being generally artists in building and finishing their old wigwams; for these and like reasons they do incline to keep their old-fashioned houses (Gookin 1792:181; emphasis mine).

This passage suggests a life-style of mobility, as opposed to sedentism, and the use of wigwams, not English-style houses.

John Dunton, an Englishman traveling in Massachusetts short after King Philip's War, serves as an independent observer of the praying town. He described the praying Indians' dwellings as follows: "The wigwams, or Indian houses, are no more than so many tents" (Dunton 1814:109).

Gookin portrays the subsistence activities of all of the Massachusetts Bay Colony praying towns. He indicates that, despite the missionaries' attempts to tie the praying Indians into the Euro-American market system through the development of cottage industry and apprenticeships, their program met with little success (Gookin 1792:184-186, 219; Whitfield 1834a:141; Whitfield 1834b:168). Eliot repeatedly discusses the obstacle presented by the persistence of seasonal subsistence activities such as hunting, fishing, and gathering that kept praying Indians from the imposed practice of full-time agriculture, animal husbandry, and cottage industry (Eliot and Mayhew 1834:224).

FIELD STRATEGY

Given the portrayal of praying Indian life in the documents, including the contradictions, an analytical archaeological survey was conducted to determine what indeed were the material products of praying Indian behavior. The following is a description

and rationale for the field strategy employed. I used a sampling interval of ten meters along transects, because of its effectiveness in intercepting either English-style houses, wigwams, or midden scatters. In a discussion of two 1761 Algonquian wigwams at Niantic, Connecticut, Sturtevant reports the size of an Algonquian wigwam as 16-20 feet (5-6m) in diameter (Sturtevant 1975). According to such seventeenth century observers as Roger Williams, William Wood, and Daniel Gookin, wigwams ranged in size from 20-50 feet (6-15m) in diameter depending upon season and function (Gookin 1792:150; Williams 1936:33; Wood 1977:113).

According to geometrical calculations worked out by Robert Hasenstab (in Dincauze et al. 1981, II:Figure 43), there is an approximately 20% probability of encountering a circular feature of five meters in diameter (the size of a small-sized wigwam) with at least one test unit, using a systematic square sampling strategy with a ten meter testing interval. I used a systematic offset grid which slightly increased the probability of encountering a five meter diameter circular feature with at least one test unit.

The probability of encountering a circular feature of ten meters in diameter (the size of a small English-style house or a large-sized wigwam) using a ten meter sampling interval is 78.5%.

Given that there is not a uniform distribution of artifacts and features within dwellings, it is necessary to calculate the chances of detecting artifacts and/or features with any one test unit. I chose 50 by 50 cm square test pits. Hasenstab (in Dincauze et al. 1981, II:Figure 44) calculated the probability of detecting various artifact densities with this size test pit. Assuming a uniform random distribution of artifacts within a 100 meter square area, the probability of any one test pit encountering an artifact density of one artifact per square meter is 22%. Such a density of artifacts, one per square meter, may be accurate for wigwam life. If the praying Indians were indeed living in English-style houses, wherein a larger number of material goods could be accumulated and discarded, an artifact density of three to five artifacts per square meter is postulated. The probability of detecting this artifact density with any one 50 by 50 cm square test pit is 53-71%.

RESULTS OF FIELD WORK

As the field season progressed, it became increasingly clear that, while we were recovering data from both the prehistoric period and from the late eighteenth through twentieth centuries, no artifacts from the mid-seventeenth century praying town occupation were recovered. There are three possible reasons why we did not detect the remains of the praying town occupation in the archaeological survey of Natick.

(1) Perhaps we did not detect the praying town occupation due to the fact that subsequent land disturbance and modification obliterated any evidence of praying town cultural remains. To discern the extent of such disturbance, I analyzed test pit profiles along the transects. Over half of the test pit profiles analyzed showed undisturbed stratigraphy, that is, an original land surface. Yet no data from the praying town were detected in these pits. These undisturbed pits did, however, yield cultural remains from the late eighteenth through twentieth centuries and from the prehistoric period. Since post-depositional land modifications cannot remove cultural remains from various centuries differentially, it appears that the seventeenth-century cultural debris was not there to be detected, given the testing intensity employed. Thus, in areas with undisturbed stratigraphy, it can be said that, with our testing strategy, praying town data were not present. In areas of stratigraphic

anomalies, on the other hand, it can be said only that our testing strategy could not detect evidence of the praying town occupation.

(2) An alternative reason why we did not detect remains of the seventeenth century praying town occupation could be that the community at Natick was resisting the dictates of the missionary program; that is, they were not living in sedentary, nuclear family English-style houses clustered around the meeting house. Therefore, the praying Indians did not produce concentrated middens, as would be expected from sedentary village life. The 1651-1675 occupation of the praying town spanned roughly one generation. The maximum number of residents reported by missionaries and colonial officials was approximately 300 individuals. The quantity of cultural remains produced by and discarded by a community of such limited size and duration would not be large. However, if the families were indeed living in the sedentary life-style imposed upon them by Eliot, and therefore producing concentrated middens, the chances of detecting the material products of their behavior, using the sampling strategy described, are quite high. If, on the other hand, the households had continued to follow a traditional life-style, with seasonal mobility and dispersed wigwams, the chances of detecting their presence decrease. Mobile families would tend not to accumulate or discard material items in concentrated form; their material culture would be scattered and less visible than that of sedentary families who could accumulate and dispose of material goods in a higher concentration, and whose material culture would be, therefore, highly clustered and visible.

(3) The third alternative reason why we did not uncover the praying town occupation could be that the survey strategy employed may have been inadequate, either in the location of units, or in the size of test pits and/or sampling interval. Indeed, if the praying Indians were not following the dictates of the colonists to settle down and produce midden, their material products would be scattered and have low archaeological visibility, making it difficult to detect these remains with the sampling strategy employed. It is possible that the field methodology was not sufficiently sensitive to intercept products of behavior on a scale smaller than we ever anticipated. Clearly, English-style houses would have been detected with the testing intensity employed, if they were indeed there at all, yet mobile wigwams may not have been detected.

The conclusion may be drawn, then, that the reason the products of the praying town occupation were not discerned is that the praying Indians, as alluded to in the documents, were not following the colonial dictates to settle down and produce midden. The archaeological survey did not locate the products of the praying Indians' behavior, I would suggest, because these products were highly dispersed and had low archaeological visibility as a result of the mobile behavior that produced them. The praying Indians' behavior was not confined to the geographical confines of the praying town, as these are defined in the documents. If this conclusion is, at least in part, correct, there are important implications.

First, John Eliot and others were exaggerating their success in missionizing and "civilizing" the native community. There is no archaeological evidence to support the claims of the missionaries' progress, and there is ethnohistorical evidence that contradicts their claims. Instead of a mission town composed of clusters of nuclear family houses around a meeting house with surrounding agricultural fields, we may be dealing with an unbounded area in which and through which the praying Indian community moved about seasonally, using the praying town as a kind of home base during formal occasions, during Eliot's visits, and for burying their dead. The praying town was not used as a geographically bounded entity; it did not exist as a "site" with

circumscribed boundaries. The behavior of the praying Indians was continuous across space, as was the distribution of the material products of their behavior.

A second significant point concerns the provisions sent from England to John Eliot for use by the praying Indians in plantation life. Lists of these supplies exist in the records of the New England Company (Kellaway 1961). The list includes provisions that assume a sedentary population of agriculturalists who dress like Europeans, live in English-style houses, hold beliefs similar to the colonists, and are organized socially and politically along English lines. The obvious question then is where did these supplies and provisions go, given that the archaeological survey encountered none of them?

There are several alternative answers. One is that the provisions never reached the praying Indians. We know that these supplies reached Boston Harbor, for there are official records signed by the shipmaster there, but there are no official records of the arrival of supplies in the praying towns (Eames 1915:7; Kellaway 1961:92). This alone is not telling. However, we do know that the Commissioners of the United Colonies found it necessary to warn Eliot more than once that the provisions should be distributed only to converted Indians (Kellaway 1961:92; Pulsifer 1859). There are also repeated instances of the Commissioners' lack of faith in Eliot's accounting of funds and supplies (Jennings 1975:247; Winship 1920:xxv, xxvi).

A second possibility is that the goods provided by Eliot were delivered to the praying towns, but the praying Indians subsequently exchanged them with neighboring Anglo and/or non-praying communities. That is, the supplies flowed into the praying towns and then were put into circulation in a regional reciprocal exchange network. Given the evidence for mobility, as opposed to imposed sedentism, it is clear that the praying Indians did not confine their activities to the town itself, but articulated with other groups in the region in their travels outside of the town.

A variation of this second explanation is that the provisions were used for a time by the praying Indians in and around the town, and then were carried with them and exchanged or recycled as they traveled about seasonally. In other words, the imported goods were discarded away from the praying town, despite the fact that the imported provisions may have been used in the town.

The final context of discussion is the Natick praying town cemetery. The only archaeological evidence for the consumption of trade goods comes from the cemetery, that is, from a ritual/ceremonial context. The imported grave goods are significant for several reasons: 1) the imports used as grave furniture are not those goods supplied to the praying Indians by John Eliot. Therefore items used as grave furniture had to be deliberately sought from other sources outside the praying town; 2) the grave goods in the Natick cemetery are comparable to those uncovered from the cemeteries of non-missionized native Americans in mid-seventeenth century southern New England. Thus, even in what was established to be the most "acculturated" community of Native Americans, the material manifestations of burial/ceremonial behavior were comparable with those of non-praying communities; 3) the disposal of any material goods in burials was in specific, direct, and deliberate opposition to Puritan dogma.

For comparative purposes, I examined non-praying Indian cemetery data from southern New England, dating from the initial decades of European colonization through the last quarter of the seventeenth century. I see seventeenth century native burials as symboling systems that oriented values and social relations in a time of rapid sociopolitical change and cultural stress. We have to interpret the

codes which lie embedded in these burials. Contact period burials include several changes from Late Woodland period burials. First, there is a significant increase in the quantity of grave goods accompanying burials. Although this increase occurs with both aboriginal and imported goods, the percentage of trade goods used as grave furniture far exceeds that of aboriginal goods in the cemeteries examined by roughly 3:1. Importantly, the grave goods are differentially distributed in the graves; some burials contain nothing at all, while others are lavishly furnished (Gibson 1980; Simmons 1970). Moreover, it is such highly visible and difficult-to-acquire imports as guns and coats which recur together in only the most lavishly furnished burial lots.

A final difference between Contact period burials and Late Woodland burials is interment in cemeteries. With the one known exception of the early Late Woodland ossuary at Wellfleet (Bradley et al. 1982), Late Woodland period burials are isolated interments of one or a few individuals in contexts of midden fill. Burial in cemeteries, as opposed to individual inhumations, may indicate that native groups began to consolidate and bring to the fore a collective identity and to express this identity in mortuary ritual, presumably in response to the direct and indirect pressures exerted by colonialism. Late Woodland isolated interments may be interpreted, in turn, as an indication of less need for concern over the reaffirmation of the living group's collective identity.

The Natick praying town cemetery was severely disturbed at the turn of the century by construction activities in South Natick Center (Natick Tribune 1923; Sheafe 1884). The original context of the interments is gone. All we really have, therefore, is a list of grave goods recovered during the construction activities, and newspaper accounts noting that 25 graves had been disturbed (Natick Tribune 1923; Sheafe 1884). Yet there are significant implications even from these sparse and incomplete data. First, the general trend of an increase in quantity of grave goods from the Late Woodland period throughout southern New England is represented in a missionized community's cemetery. As noted, this is significant because the association of any material objects with the dead was in direct and specific defiance of Puritan dogma. Second, the types of grave goods from the praying town cemetery are comparable to the types of goods assigned meaning and value as grave furniture in non-missionized burials. Third, imported goods found in the praying town interments are not the kinds of items supplied by John Eliot for use by the praying Indians in plantation life. This third point indicates that the praying Indians did not assign symbolic meaning to supplies freely distributed by missionaries, but obtained goods which were assigned such symbolic value through exchange networks operating between the praying Indians and Anglo and/or non-praying Indian sources outside the town.

My conclusions from the burial data are based on Pearson's theoretical advances. Pearson notes (1982:112) that "social advertisement in death ritual may be expressedly overt where changing relations of domination result in status re-ordering and consolidation of new social positions." It may be the case that such overt expression of the sociopolitical order occurred in Contact period burials, including those in the Natick cemetery. At a time when the native sociopolitical system was characterized by competition and instability, the differential disposal of trade goods in graves may have been part of key individuals' strategies for making claims to status and authority. The benefits to the rest of the community of clearly defined political roles within the community would be the generation of greater community solidarity. The result of this increased solidarity would be the ability to exercise a greater measure of self-determination and autonomy in resisting the depredations of the colonists, and in asserting specifically Native American cultural patterns.

Indeed, Eliot repeatedly complained about the fact that shamanistic practices had far from disappeared in the praying town (Whitfield 1834a:131). This was despite the fact that shamanism was outlawed by the Massachusetts Bay Colony, and its practitioners and participants subject to harsh punishment (Whitmore 1889:163). Furthermore, in spite of colonial officials' and missionaries' attempts to control who filled leadership positions in the praying towns (Eliot 1839; Gookin 1792:177), positions of authority were filled instead by individuals using the same bases for claims to authority as non-praying individuals, a dynamic combination of ascription and achieved status (Burton 1976; MacCulloch 1966).

In closing I would like to suggest that a combined archaeological and ethnohistorical analysis of other praying towns would be extremely fruitful. Outside of Massachusetts Bay Colony, praying towns were not operated by John Eliot, and the missionaries to the southeast of Massachusetts Bay Colony used somewhat different methods. An archaeological and ethnohistorical investigation of these praying towns would certainly be helpful to the goal of gaining a better understanding of native strategies of resistance to colonial policies of political domination and cultural suppression.

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POSSIBLE CHRISTIAN INDIAN HEADSTONE

Philip Brady

The artifact described and pictured here (Fig. 12) was found in the Quaddick area of Thompson, Connecticut, on the southeastern shore of Quaddick Reservoir. The reservoir is near Quaddick State Park, and is approximately 2.5 klm from the Rhode Island state line. The source of water for the reservoir appears to be Blackmore Brook, which enters the reservoir at the southeastern corner. From the brook westerly the land close to the shore gradually rises to a height estimated to be some 36 meters above usual water level.

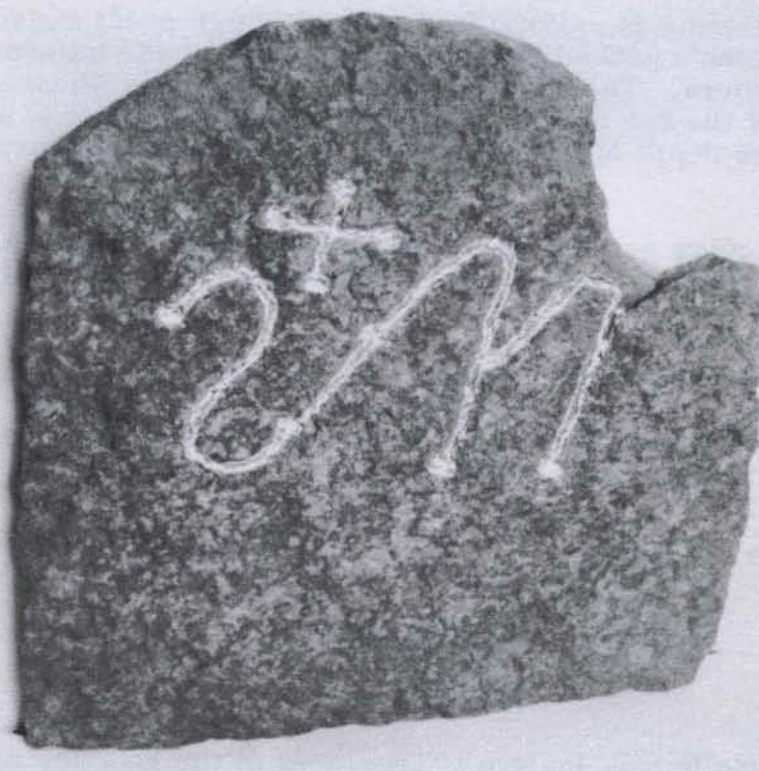


Figure 12
Granite headstone from Quaddick Reservoir, Connecticut.

It was close to the water along this stretch of shore, within 72 meters of the brook mouth, that the artifact was found. A summer resident, James E. Bieniecki, a member of the Massachusetts Archaeological Society, discovered the stone by chance several years ago when he was hunting for flat stones. His properties lies between Town Farm Road and the reservoir.

The headstone material has been identified by Leonard Weaver, a professional geologist, as granite gneiss, probably Paleozoic in age. Visual examination discloses that the stone contains black, white, and muscovite micas, as well as feldspar and quartz. According to Weaver, the slab exhibits the characteristic banding common to this type of granite.

The artifact weighs 10.35 kgs. It stands 45 cm high, measured in the center of the slab from base to top. Width, measured across the base of the letter forms, is 44 cm. Length of the left side is 38 cm; the right side from base (below small corner break) to upper broken area measures 30 cm.

The entire face of the slab was pecked to produce a relatively uniform surface; the back surface appears to be in its original state. The stone is uniform in thickness, varying from a few edge measurements of 3 cm to a large number of 2.5 cm measurements, with 2.5 cm being the average thickness.

The base slab is a fine piece of workmanship and it obviously required much labor and skill to reduce the face and produce the final (unbroken) shape. Although there is no hard evidence, it seems proper to conclude that the break in the upper right corner occurred after the stone was originally crafted.

Visually, the lettering is uniform in depth, although exact measurement is impossible because of the stone's pecked surface. Line depth of the lettering appears to average several millimeters. The pecked, circular depressions which are the beginning (and ending) points of the two letters, the reverse S and the M or N, appear to be approximately twice the depth of the lettering. They measure approximately 1.25 cm by 1.5 cm.

The two letters cover an area 26 cm wide and 14.5 cm deep. The arms of the cross measure 6.5 cm vertically and 7.5 cm horizontally, including the roughly circular pecked depressions.

Whether or not the headstone, because of its cross, originally marked a Christian Indian burial is unknown. It might possibly be a Colonial headstone. Any person wishing to examine the artifact or to offer further information may make arrangements to contact the author through Bronson Museum.

CORRECTION

Russell Barber

In a recent article in this Journal ("Treasures in the Peabody's Basement: A Button Mold With an Extraordinary Incised Figure," 1984, *MAS Bulletin* 45(2):49-51), I erroneously ascribed the provenience of this specimen as an Indian grave in Lincoln, Massachusetts. In truth, the records in the Peabody Museum do not tell what sort of site the artifact came from; it is a reasonable possibility that the specimen came from a grave, but that possibility is unsupported by documentation.

This error was brought to light by Dr. Ian Brown, Associate Curator of North American Collections at the Peabody Museum, Harvard University. Dr. Brown also suggests that my assumption that the artifact was manufactured by an Indian may be unwarranted. Supporting any assumption or conclusion about the maker of a tool, of course, is very difficult. I suggest, however, that the evidence supports my assumption. Patrick Malone's studies of Contact Period Indian gun technology suggest that bullet molds were regularly made by New England Indians. Furthermore, Frederick Ward Putnam has reported the finding of similar stone molds in a New England Indian grave, definitely documenting the use of such molds by Indians.

ARCHAEOLOGY IN MASSACHUSETTS, 1980-1985

The Trustees of the Massachusetts Archaeological Society announce the publication of a survey of archaeological activities and published articles on archaeology in Massachusetts for the past five years, by Elizabeth A. Little, president of the MAS. This 26 page study guides you to Massachusetts Archaeological Society publications, local, state, and federal publications, cultural resource management reports, and organizations carrying out archaeological projects in Massachusetts. Available from the Bronson Museum, 8 North Main Street, Attleboro, MA 02703, for \$4 plus \$1 postage and handling.

— IN MEMORIAM —

HENRY HORNBLOWER II (1917-1985)

Ralph S. Bates

The death of Henry Hornblower II on Sunday October 20, 1985 at Mount Auburn Hospital in Cambridge following a heart attack brought to a close a life-long interest in archaeology. Born in Boston of colonial stock on November 5, 1917, he spent his childhood summers on family-owned land where now Plimoth Plantation stands. Harry, as he was then known, spent much time reading Plymouth town history and exploring the geography of the region around the site of the town of the Pilgrims. He gradually evolved the idea of creating the plantation as a living museum of colonial life. Meanwhile, he was graduated from Milton Academy and Harvard University. As his interest in archaeology increased he became a charter member of the Massachusetts Archaeological Society and made frequent contributions to its activities during its early years. In World War II he served in the army in Washington and in the European Theater.

When the war was over, he settled down to a long career in the family business as a Boston stockbroker. Here he made his mark in the investment world, and came to hold many offices in the financial world. He also held many posts on boards of clubs, historical and archaeological societies, and museums.

In 1947, Henry and his father established a non-profit institution named Plimoth Plantation, Inc. Its goal was simple, said Henry: "We just wanted to tell the Pilgrim story." The site of Plimoth Plantation closely resembles the original Plymouth site of the Pilgrims three miles to the north. Both faced the Atlantic, both have small streams (Town Brook at Plymouth and Eel River at the Plantation), and both are on the sites of previous Indian habitations. Under the leadership of the Hornblowers the Plantation has grown from an initial annual budget of \$200 to almost \$3,000,000.

The living outdoor museum has attracted about 25 million visitors thus far, and they come from all over the world. Recently, a Japanese prince was introduced to the "Captain Miles Standish" role impersonator. A few years ago a "Wampanoag Village" was added to the outskirts of the Plimoth Plantation recreation of the Pilgrim Village of 1627. Elaborate re-enactments of Pilgrim and Indian ceremonies are held throughout the year, especially around Thanksgiving time. Research and writing go on all the time.

Based in considerable part on diggings at the Hornblower Site (M49SE-28) on Squibnocket Pond near Gay Head on Martha's Vineyard, Dr. William A. Ritchie published a major study entitled The Archaeology of Martha's Vineyard: A Framework for the Prehistory of Southern New England (Garden City, Natural History Press, 1969). It is from this site that the Squibnocket Triangle Points and the Squibnocket Stemmed Points take their name.

Some older members of the Massachusetts Archaeological Society still remember meeting Henry Hornblower for the first time way back in the 1950's when he graciously invited them to dig on the Indian site at Plimoth Plantation. His contributions to Massachusetts Archaeology have been unusually varied and substantial, and we are all in his debt.

THE CONTRIBUTORS

CLINT ANDREWS, recently retired from the University of Massachusetts Field station on Nantucket, was for many years a commercial fisherman. He also has a long-term interest in Nantucket archaeology.

RUSSELL BARBER is now an Assistant Professor of Anthropology at California State University, San Bernardino, but he was associated with Massachusetts archaeology for many years as Director of the Institute for Conservation Archaeology at Harvard University.

RALPH BATES has retired from a career as a professor of History at Bridgewater State College. He has been a member of the Massachusetts Archaeology Society for many years, and currently serves as Archivist for the Society.

PHIL BRADY is an avocational archaeologist and a member of the Cohannet Chapter of the Massachusetts Archaeological Society.

ELISE BRENNER is an Assistant Professor of Anthropology at Bloomsburg University in Pennsylvania, and a graduate of the Department of Anthropology at the University of Massachusetts, Amherst.

BETTY LITTLE, currently serving as President of the Massachusetts Archaeological Society, has recently completed an MA in Anthropology at the University of Massachusetts, Amherst. Her primary research focus is on Nantucket archaeology and ethnohistory.

JOHN PRETOLA is Curator of Anthropology at the Springfield Science Museum, where he is involved in research with the archaeological collections. He is also a Trustee of the Massachusetts Archaeological Society.

LAURIE WEINSTEIN is a research associate at the Haffenreffer Museum of Anthropology at Brown University, an editorial assistant at the Rhode Island Historical Society, and an instructor of Anthropology at the Community College of Rhode Island and at Northeastern University.

NOTES TO CONTRIBUTORS

AUTHORS of articles submitted to the M.A.S. Bulletin are requested to conform to the following regulations:

Manuscripts must be typed as an original with one carbon (or photocopy). Margins must be 1½ inches (38mm) on both sides. Corrasable paper should NOT be used. Original and copy are to be sent to the Editor for evaluation and comment.

Typing is to be on one side of paper only with at least double spacing. Proper heading and bibliographic material must be included.

Manuscript headings should be prepared as follows:

THE PONKAPOAG SITE: M-35-7

Robert A. Martin

Bibliographic references are to be presented as follows:

GOOKIN, D.

1970 Historical Collections of the Indians of New England (1674)
Jeffrey H. Fiske, annotator. Towtaid. Worcester.

They should be listed alphabetically by author; several references by the same author should be listed chronologically by year.

Intratextual reference citations are to include the author's name, date of publication, and the page, plate, or figure number, all enclosed in parentheses, as follows:

(Bowman & Zeoli 1973:27) or (Ritchie 1965: Fig 12)

Illustrations must be submitted to the Editor as originals and must conform to the following set of standards:

1. All illustrations must be planned with the page size in mind, either full page, half page or quarter page. Allowance must be made for caption. Special cases must be discussed with the Editor before illustrations are made.

Drawings should be made for same size reproduction, and must be sent as originals executed in India ink. NO WASH DRAWINGS OR PENCIL RENDERINGS ARE ACCEPTABLE.

Photographs must be glossy prints with HIGH CONTRAST. Standard 5"x 7" or 7"x 9" work out very well. Special problems, as with the drawings, must be referred to the Editor before preparation.

2. All illustrations are called Figures (including maps). They are to be numbered on the back in order of reference from the text. Every item in drawings or photographs must be properly identified either by number or letter. All lettering must be clear print and legible. All persons in photographs must be identified. Captions should not be considered part of the illustration.

Captions for figures should be typed on a separate sheet in order, numbered to correspond to the figures. Scales should be included with all figures for which they are appropriate, and they must be LINEAR (no "full size" notations).

Dimensions and distances should be given in English and metric units, or metric alone. The two systems should not be mixed within a text. If feet and inches are used, they are to be spelled out (no ' for feet nor " for inches).

THE EDITOR is receptive to archaeologically serious contributions of any reasonable length. Long pieces can usually be condensed effectively if they exceed the limits of our publication. The Editor welcomes short pieces and encourages contributors to write them.

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June 1986

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